**A Work Project, presented as part of the requirements for the Award of a Masters Degree in Economics from the NOVA – School of Business and Economics.**

# CORRELATES OF INTERGENERATIONAL MOBILITY AND POLITICAL VIOLENCE

MATILDE POLÓNIA GONÇALVES GRÁCIO

684

Supervision of:

Professor Pedro Vicente

June 2015

# Correlates of Intergenerational Mobility and Political Violence[1]


## Abstract

This work project aims at exploring the role of intergenerational immobility in political violence. A cross-country macro-level analysis is done where no significant results are found. Additionally, an individual micro-level analysis is done where intergenerational mobility (measured through a proxy variable) has a negative significant effect in political violence.



**Keywords:** Intergenerational Mobility, Political Violence


## 1. Introduction

According to the Armed Conflict Report 2014[2], between the 1st of January and the 31st of December of 2013 there were 28 active armed conflicts in 25 countries; with Africa hosting 12 of these conflicts. Because conflict persists so should the work to understand it. Therefore, this work project contributes to the literature on the correlates of political violence. In detail, it focuses its efforts in entering the debate of the different measures of societal inequality as a source – or at least a correlate – of political violence. The aim of this work project is to access the role played by intergenerational immobility in explaining political violence.

In order to answer this question two separate approaches are followed. The first entails a macro-level analysis of the relationship between intergenerational immobility and political violence. To do so, I first construct the measure of intergenerational immobility using a highly adopted method in the intergenerational mobility literature – the two-sample two-stage least squares estimator. Then I use this estimated measure of


[1]I would like to thank the support and guidance provided by my advisor, Professor Pedro Vicente.

[2] For more information see: http://ploughshares.ca/programs/armed-conflict/armed-conflicts-report/

mobility to test for the relationship between intergenerational mobility and political violence. Notice that in order to obtain robustness in the results several extensive margin and intensive measures of political violence were used. The second approach entails a micro-level individual analysis. This uses a proxy measure of intergenerational mobility and relies on survey self-reported measures of well-being and use of violence due to political reasons. More specifically, in this section I test if the difference in well-being of an individual compared to its parents 10 years ago (proxy measure of intergenerational mobility) has an effect on individual use of political violence. Additionally, I look at the impact in political violence of the different movements of the standings in well-being, *i.e.* i) an upward movement (where an individual is better-off than his parents), ii) no movement (where an individual is in the same stand as his parents) and, iii) downward movement (where an individual is worse-off than his parents).

Results of the several estimations done go as follows. For the first (macro-level) approach, I find no significant effects of the main variable of interest in political violence. I find however some significant results on variables such as GPD per capita, degree of freedom of a country and amount of urban population (in line with the literature). For the second approach (micro-level) I find that the proxy measure of mobility yields significant negative effects in political violence.

The rest of the work project will develop as follows. Section 2 provides a concise literature review of the topic. Section 3 contains a theoretical framework. Section 4 focuses on the empirical results, and it is divided into data description, estimation strategy and results. Section 5 concludes.

## 2. Literature Review

Interest in the causes of conflict is as old as Plato and Aristotle. The later rooted civil unrest within the Athenian society in three fundamental causes: "i) the unequal nature of Athenian society, ii) frustration with the weakness and incompetence of Athens' leaders and iii) the desire for the wealth and privilege that holding political office may entail" (Jacoby, 2008, p.10). All three ideas have been explored by economics using different datasets and methodologies with the intent to explain political violence or, more frequently, the starkest manifestation of such violence: civil war.

Seminal work by Collier and Hoeffler (1998; 2004) shows that greed rather than grievance explains rebellion. They find that economic factors, particularly the ability to finance and organize a rebellion (captured by the existence of natural resources, as well as economic growth and male secondary education enrollment) strongly predict the outbreak of a civil war. Fearon and Laitin (2003) conclude that proxies for political grievances such as ethnic and religious diversity have little explanatory power in predicting the onset of a civil war. Additionally, proxies for state institutional capacity and strength (most importantly measured by per capita income) are considered robust predictors of civil war. Montlavo and Reynal-Querol (2005) who study the relationship between conflict and ethnic polarization (introduced in the theoretical work of Esteban and Ray, 1994, 1999) provide significant support for "deep cleavages" along large group lines to affect conflict. Esteban, Mayoral and Ray (2012) draw from the theoretical work of Esteban and Ray (2011) to study the impact of ethnic divisions on conflict. More specifically, they look at polarization, fractionalization and the Gini-Greenberg index, and link them to conflict intensity finding significant evidence that these distributional measures matter for conflict. Additionally, Dixon (2009), provides

an overview of other explanatory variables that have been considered as correlates of conflict such as population, geographical and environmental variables.

Inequality has been highly disregarded as a consistent way to explain conflict. Despite the great amount of approaches undertaken in order to identify the role of inequality in political violence, it is not clear that inequality (traditionally measured by the Gini index) has a correlation with conflict. Explanations in the literature for the non-existence of this relation draw for reasons such as the lack of good measurement and availability of data for inequality. Moreover discussions on the explanatory power of different types of inequality, *e.g.* vertical inequality, horizontal inequality, inequality within the same group, for political violence seem to play an important role. It is within this context that the measurement of intergenerational mobility, *i.e.*, the way that inequality persists across generations, plays in the incidence and magnitude of political violence.

## 3. Theory

The theoretical framework used follows a very simplistic approach to the extensive work of Besley and Persson (2011). Although the aim of the empirical part of this work is not directly related to the model it is still a good framework to understand mechanisms of inequality in explaining political violence.

Let's consider a two period model $s = 1, 2$ and two groups of individuals $(A, B)$, with half the population each. In the beginning of the first period one of the groups holds power (incumbent) $I_1 \in \{A, B\}$, the other group is opposition $O_1 \in \{A, B\}$. $\gamma$, is a measure of political instability. More specifically, it is the outcome of a potential conflict that is triggered by investments in violence by the incumbent and the opposition.

The utility function of an individual is given by $u_s^J = c_s^J + \alpha_s g_s$, where private consumption $c_s^J$ depends on the net tax income $(1 - t_s)y(p_s^J)$ and transfer received $r_s^J$. $g_s$ is a public good (and here we assume a linear relation). And $\alpha_s$ has a two-point distribution $\alpha_s \in \{\alpha_L, \alpha_H\}$, where $\alpha_H > 2 > \alpha_L > 1$ and $\text{Prob}[\alpha_s = \alpha_H] = \emptyset$. The income tax is constrained by existing fiscal capacity ($t_s < \tau_s$). $y(.)$ is and increasing concave function. $y(p_s^J)$ is wages or ownership of other factors such as land or capital. Government budget constraint at date s is given by: $R + t_s \frac{y(p_s^I) + y(p_s^O)}{2} = g_s + m_s + \frac{r_s^I + r_s^O}{2}$, where $R$ is time-independent revenue source accruing only to government and $m_s = \mathcal{F}(\tau_2 - \tau_1) + \mathcal{L}(\pi_2 - \pi_1) + \omega(\pi_1)L^I$ if $s = 1$ and 0 if $s = 2$ is the investment cost in fiscal capacity. Constraints in the incumbents allocation of transfers is given by $\theta = \frac{\sigma}{1+\sigma} \in [0, \frac{1}{2}]$; the incumbent must give a fixed share $\sigma$ to the opposition for any unit of transfers awarded to its own group.

The timing of events is the following:

1. We begin with initial stock of state capacities $\{\tau_1, \pi_1\}$ and an incumbent group $I_1$. Nature determines $\alpha_1$ and R.
2. $I_1$ chooses a set of period-1 policies $\{g_1, t_1, p_1^I, p_1^O, r_1^I, r_1^O\}$ and determines through investments the period-2 stocks of fiscal and legal capacity $\{\tau_2, \pi_2\}$. $I_1$ and $O_1$ simultaneously invest in violence levels $L^I$ and $L^O$.
3. $I_1$ remains in power with probability 1- $\gamma(L^o, L^I, \xi)$, and nature determines $\alpha_2$.
4. $I_2$ chooses period-2 policies $\{g_2, t_2, p_2^I, p_2^O, r_2^I, r_2^O\}$.

The incumbent chooses the optimal policy vector $\{g_s, t_s, p_s^I, p_s^O, r_s^I, r_s^O\}$ so as to maximize $\alpha_s g_s + (1 - t_s)y(p_s^I) + r_s^I$. Subject to $t_s \leq \tau_s$, $p_s^I \leq \pi_s$, and $r_s^O \geq \sigma r_s^I$ and the government budget constraint. To obtain investments in political violence agents

maximize the expected utility period-2 utility of group J in period 1: $W(\alpha_1, \tau_1, m_1, \beta^J) + \Big(1 - \gamma(L^o, L^I, \xi)\Big)U^I(\tau_2, \pi_2) + \gamma(L^o, L^I, \xi)U^O(\tau_2, \pi_2)$ for the incumbent group, and

$$W(\alpha_1, \tau_1, m_1, \beta^J) - \nu\omega(\pi_1)L^O + \gamma(L^o, L^I, \xi)U^I(\tau_2, \pi_2) + \Big(1 - \gamma(L^o, L^I, \xi)\Big)U^O(\tau_2, \pi_2)$$

for the opposition group. $\nu\omega(\pi_1)L^O$, is the private cost of violence and needs to be deducted for the opposition group. The incumbent uses public funds.

Inequality is one of the extensions introduced in the model and it is constructed by considering differences in wages between the incumbent and the opposition groups with $\omega^J$ for $J \in \{I, O\}$. Let there be two levels of wages $\omega^J \in \{\omega^L, \omega^H\}$. Let $\omega$ denote the average wage $\omega = (\omega^H + \omega^L)/2$.

The authors present some predictions of the introduction of inequality in the model, which I translate here. If the incumbent is poor it will lead to a higher investment in state capacity. On the other hand, if the incumbent is rich it will diminish the investment on fiscal capacity. Additionally, some discussion is also introduced on the effect of inequality in investments in political violence. According to the authors, an asymmetry in wages might make the richest group less inclined to violence. This can be called a "loyalty premium", where the high income group would recruit people from its own ranks increasing the cost of violence. However, rich and violence-prone groups would wish to hire low-wage individuals to carry out violence on their behalf. Moreover, one group could be better organized in raising resources for fighting when in opposition, *i.e.*, lowering the costs of violence, making political violence more likely.

## 4. Empirical Results

### 4.1. Data

**Demographic and Health Surveys (DHS) –** The DHS Program is a household survey conducted consistently and periodically across different countries since 1984, providing a solid base for a cross country analysis. Currently, the DHS is in its seventh phase,

however due to data fit and availability, only phases two through five are used (1991-2013)[3]. The structure of the dataset allows for the collection of information on an individual's wealth and characteristics provided he is the head of the household, as well as individual characteristics of other members of the household. More specifically, information collected on the individuals' wealth is constituted by household characteristics and ownership of goods[4]. The relevant individual characteristics provided for both head of household and other members of the household are age, education, and type of location of residence (urban or rural)[5]. This dataset allows for the estimation of intergenerational mobility[6].

**Center for Systemic Peace, Major Episode of Political Violence (MEPV) –** A MEPV is defined "by the systematic and sustained use of lethal violence by organized groups that result in at least 500 directly-related deaths over the course of the episode"[7]. The MEPV dataset contains information from 1946 until 2014 on magnitude scores of MEPV for all countries. The information contained in this dataset is transformed into a dummy variable that reports simply the existence or not of a MEPV by country and year.

**Armed Conflict Location and Event Data Project (ACLED) –** The ACLED is a comprehensive dataset on political violence for developing states. The latest version (Version 5) is used and includes data from 1997 until 2014. The ACLED main focus is on politically violent events, which are defined as "a single altercation where often force

[3] First-round of surveys did not include the questions that provided the required information. Sixth and seventh rounds are not yet complete and/or available for every country.

[4] Household characteristics and ownership of goods: source of drinking water, location of water source, toilet facilities, material of construction of the roof-top, number of rooms in the household per person, electricity, radio, television, mobile-phone, refrigerator, bicycle, motorcycle and car.

[5] To avoid different cultural settings for women across countries, only men are considered.

[6] Countries for which this dataset is complete and available are: Ghana, Kenya, Malawi, Mali, Mozambique, Namibia, Nigeria, Senegal, Tanzania, Uganda and Zambia

[7] For more information see http://www.systemicpeace.org/inscr/MEPVcodebook2014.pdf, page 2

is used by one or more groups for a political end (…)"[8] .The dataset contains information on dates and locations of political violence as well as estimated reported fatalities *per* event of political violence.

**Afrobarometer –** The Afrobarometer dataset provides micro-level information on "…the social, political, and economic atmosphere in Africa"[9]. Round two (2004) of the Afrobarometer dataset is used[10]. More specifically, the information is provided by the following questions: i) "on a scale between 0 and 10, where 0 are "poor" people and 10 are "rich" people: Which number would you give your parents ten years ago?", ii) "on a scale between 0 and 10, where 0 are "poor" people and 10 are "rich" people: Which number would you give yourself today?", and iii) "… please tell me whether you, personally, have done any of these things during the past year. If not, would you do this if you had the chance: Used force or violence for a political cause?" The first two questions provide a way to estimate a proxy for intergenerational mobility. The third question provides information on self-reported use of violence due to political reasons[11].

**Other datasets –** The Word Development Indicators (WDI) dataset is used to obtain information on i) Gini Coefficient, ii) GDP per capita and iii) Urban Population. Fearon and Laitin (2003) is used to obtain data on percent of mountainous terrain. Information on the degree of freedom of a country is taken from the Freedom House dataset. Measures of Ethnic Fractionalization and Ethnic Polarization are taken from Montlavo and Reynal-Querol (2005).

[8] For more information see: http://www.acleddata.com/wp-content/uploads/2015/01/ACLED_Codebook_2015.pdf (page 7)
[9] For more information see: http://www.afrobarometer.org/
[10] To avoid different cultural settings for women only men are considered.
[11] Countries for which this dataset was complete and available are: Botswana, Cape Verde, Ghana, Kenya, Lesotho, Malawi, Mali, Mozambique, Namibia, Nigeria, Senegal South Africa, Uganda and Zambia.

## 4.2. Estimation Strategy

In order to analyze the relation between intergenerational immobility and political violence two different approaches are established. The first uses macro-level data and entails first, the construction of a measure of intergenerational immobility. This allows cross-country analysis of intergenerational immobility and political violence. The second uses micro-level data, individual level analysis of intergenerational mobility and political violence.

This section is therefore divided in three parts. The first provides the estimation strategy for the construction of the variable of intergenerational immobility. The second demonstrates the specifications used to obtain a macro-level relation between intergenerational immobility (using the measure obtained in the first stage) and political violence. The third provides the estimation strategy for a micro-level analysis of intergenerational mobility and political violence.

### 4.2.1. Measurement of Intergenerational Immobility

The measurement of intergenerational immobility is often done through intergenerational elasticity (IGE) which is provided by the following equation:

$$Y_i = \beta_0 + \beta_1 Yp_i + \varepsilon_i \qquad (1)$$

where $Y_i$ is life-time earnings of the children, $Yp_i$ is life-time earnings of parents, $\beta_0$ is a constant, $\varepsilon_i$ is the error term and $\beta_1$ is the measure of intergenerational immobility (IGE). When $\beta_1$ is zero, life-time earnings of the children do not depend on the parents' life-time earnings (full mobility); when $\beta_1$ is one, life-time earnings of the children depend fully on the life-time earnings of the parents (no mobility).

Recurrent issues in the intergenerational mobility literature related with data availability and fitness of survey method impede the estimation to be done as described above. The two-sample instrumental variables (TSIV) estimator firstly described in

Angrist and Krueger (1992) is a broadly accepted method that mitigates data restriction issues. More specifically, this project uses the two-sample two-stage least squares estimator (TS2SLS) first used by Björklund and Jäntti (1997) to estimate intergenerational mobility, that was massively adopted in the intergenerational mobility literature. This method is asymptotically more efficient (Inoue and Solon, 2010), and computationally easier than TSIV. The TS2SLS estimation relies on two distinct samples. A sample of individuals (secondary sample) that constitute a set of pseudo-parents, used to predict life-time earnings of an individual with a given set of characteristics. A second sample of individuals (main sample) that constitute the children that report on their own earnings and characteristics, as well as their parents' characteristics.

Provided the structure and content of the DHS dataset the two samples for the estimation of intergenerational mobility through TS2SLS are obtained by splitting the overall sample into two. The secondary sample is constituted by male individuals born before 1960 that are heads of household (pseudo-father). The main sample is constituted by male individuals born after 1960 that are heads of household and whose father lives in the household (son). The wealth of the individual is used as a proxy for his life-time earnings.

Equations 2, 3, and 4 are the sequence of specifications that allow for estimation of intergenerational immobility (IGE). Let$Wf_j$, be wealth of an individual in the secondary sample. Let $\widehat{W}f_i$ be the predicted wealth of the father of the individual in the main sample. Let$Ws_i$ be wealth of an individual in the main sample. Let $Xf_j$ and $Xf_i$ be a vector of characteristics, namely age, education and a dummy for urban location of the household of an individual.

$$Wf_j = \gamma_0 + \gamma_1 Xf_j + \varepsilon_j \qquad (2)$$

$$\widehat{W}f_i = \gamma_1 Xf_i \quad (3)$$

$$Ws_i = \beta_0 + \beta_1 \widehat{W}f_i + \varepsilon_i \quad (4)$$

$\beta_1$ is the estimated measure of intergenerational association of wealth between sons and fathers; when equal to zero it means full mobility, and when equal to one it means there is no mobility.$\beta_1$ (IGE) is the value that is used in the next stage.

### 4.2.2. Intergenerational Immobility and Political Violence

The macro-level relationship between intergenerational immobility and political violence is captured using extensive and intensive measures of political violence as described below. Let the following equation (5) be the baseline for the several estimations done.

$$\text{Political Violence}_{ct} = \delta_0 + \delta_1 IGE_{ct} + \delta_2 X_{ct} + \delta_3 X_c + \varepsilon_{ct} \quad (5)$$

As previously mentioned two types of measures of political violence are considered. The first type (an extensive measure), focuses on the existence of i) a MEPV (1 if there is a major episode of political violence, and 0 otherwise) by country and year and ii) existence of deaths (1 if there is at least one reported death, and 0 otherwise), provided a politically violent occurrence has been registered, by country and year. We therefore estimate the coefficients through maximum likelihood with a logistic specification. The second type of measure of political violence tries to capture the intensity (magnitude) of political violence. Thus, it uses intensive measures of political violence. The first being the number of politically violent events registered by country and year and the second being the number of deaths, provided a politically violent event was registered, by country and year. The estimation of the coefficients is done using ordinary least squares.

The right side of the equation is similar in all specifications. $\delta_0$ is a constant. $IGE_{ct}$ is the previously estimated measure of intergenerational immobility by country and

year. $X_{ct}$ is a vector, per year and country, of characteristics. $X_c$ is a vector of country characteristics. $\varepsilon_{ct}$, is an error term.

### 4.2.3. Intergenerational Mobility Proxy and Political Violence

The relationship between self-reported perceived intergenerational mobility and self-reported use of violent behavior due to political reasons is estimated in this section. The micro-level relationship between intergenerational mobility and political violence is given by the following equation:

$$\text{Individual Political Violence}_i = \delta_0 + \delta_1 \text{IGE Proxy}_i + \delta_2 X_i + \delta_3 X_l + \varepsilon_i \quad (6)$$

where $\text{Individual Political Violence}_i$ is an ordered categorical variable of self-reported use of violence due to political reasons (0=No, would never do this, 1=No, but would do if had the chance, 2=Yes, once or twice, 3=Yes, several times, 4=Yes, often). $\text{IGE Proxy}_i$ is the difference between self-reported current well-being of an individual and the well-being of its parents 10 years ago (integer scale between -10 and 10; -10=an individual is 10 times worse than its parents, 0=an individual has the same well-being as his parents, 10=an individual is 10 times better than his parents). $X_i$ is a vector of individual characteristics[12] and $X_l$ is a vector of location controls[13].

Issues of endogeneity do not go unnoticed throughout the work. Indeed one might argue that reasons that explain the difference in well-being between individuals and parents might be the same that explain the engagement in political violence. One common approach to deal with issues of endogeneity is to introduce an instrumental variable (IV). The basic idea behind the use of an IV is to find a variable that explains

[12] Individual control variables: age, head of household dummy, urban dummy, no schooling (base category), complete primary schooling, complete secondary schooling, higher education, no employment (base category), part time employment, full time employment, income (first quintile), income (second quintile), income (third quintile) (base category), income (fourth quintile), income (fifth quintile).

[13] Location control variables: dummy for school, dummy for police station, dummy for piped water, dummy for electricity grid, dummy for health clinic, dummy for sewage.

the dependent variable only through its effect in the independent variable. In detail the necessary conditions to use an IV are the following:

$$\mathrm{Cov}(Z, \mathrm{x}) \neq 0 \quad (7)$$

$$\mathrm{Cov}(Z, \varepsilon) = 0 \quad (8)$$

Equation 7, states that the instrument (Z) must be correlated with the endogenous explanatory variable. Equation 8, also known as the exclusion restriction, states that the instrument (Z) must be exogenous, *i.e.*, it must be uncorrelated with any other determinants of the dependent variable.

In this specific context, we want to explain the use of violence due to political reasons trough a variable that is only related to the difference in well-being between individuals and their parents. A thorough exploration of the dataset available led me to believe that a measure of availability of goods[14] might work as a good IV provided a good control of an array of other variables. The main idea behind the use of this IV, is that provided the extensive use of control variables that influence the well-being of an individual, the availability of goods might be linked to political violence solely through the difference in well-being between individuals and their parents. Therefore the first-stage regression (equation 9) and then the reduced form (equation 10) are estimated:

$$\text{IGE Proxy}_{\mathrm{i}} = \vartheta_0 + \vartheta_1 \mathrm{Z}_{\mathrm{i}} + \vartheta_2 \mathrm{X}_{\mathrm{i}} + \vartheta_3 \mathrm{X}_{\mathrm{l}} + \omega_{\mathrm{i}} \quad (9)$$

$$\text{Individual Political Violence}_{\mathrm{i}} = \delta_0 + \delta_1 \mathrm{Z}_{\mathrm{i}} + \delta_2 \mathrm{X}_{\mathrm{i}} + \delta_3 \mathrm{X}_{\mathrm{l}} + \varepsilon_{\mathrm{i}} \quad (10)$$

where $\mathrm{Z}_{\mathrm{i}}$ is as ordered categorical variable of the availability of goods compared to the past (1= Much Worse, 2=Worse, 3=About the Same, 4=Better, 5=Much Better). All other variables are equal to equation 6.

[14] The specific survey question and possible answers are the following:

- Please tell me if the following things are worse or better now than they used to be, or about the same: The availability of goods?
- 1= Much Worse, 2=Worse, 3=About the Same, 4=Better, 5=Much Better

Throughout this project one main assumption that has been in place is that mobility (or immobility) has the same impact on political violence whether it allows for an individual to improve his life easily (upward mobility) or to worsen his life easily (downward mobility). In order to try to understand the differences of the effect of the two movements on political violence we replace the previous proxy variable of intergenerational mobility with a categorical variable that comprises the three types of movements that are observed when comparing an individual's well-being with his parents well-being 10 years ago (worse – or downward mobility, equal – or no mobility, and better – or upward mobility). The estimation follows the equation:

$$\text{Individual Political Violence}_i = \delta_0 + C_1 \text{IGE Proxy}_i + \delta_2 X_i + \delta_3 X_l + \varepsilon_i \quad [15] (11)$$

$\text{IGE Proxy}_i$ is therefore a three category variable of the difference between the current well-being of an individual and the well-being of its parents 10 years ago; base category is Downward Mobility (negative difference), No Mobility (no difference) and Upward Mobility (positive difference). All other variables are the same as in equation 6.

### 4.3. Results

#### 4.3.1. Measurement of Intergenerational Mobility

Table 1 provides an example of first-step estimation by Ordinary Least Squares for the estimation of IGE. Level of education and urban/rural location are persistently significant at 1% level across the specifications of the three years (2003, 2008, and 2013). Having complete primary or secondary or higher education studies increases the level of wealth, on average, *ceteris paribus*, compared to the base category (no education). Living in an urban region increases wealth of an individual, on average, *ceteris paribus*. Age of an individual is significant at a 10% level in 2008 and 2013 and it has a positive effect.

[15] Small variations of this equation are presented to account for income levels as well as interaction between types of mobility (downward mobility, no mobility, and upward mobility) and income levels.

Table 2 provides the second stage regression. The predicted fathers' wealth is significant in all specifications. Having complete secondary level of schooling or above is also significant in 2008 and 2013. However, despite the significance in this specific country of some levels of education in determining wealth of an individual, the IGE estimates that are considered for the next stages of the project are in columns 1[16]. Table 3 provides a summary of all (country and year) IGE estimates.

**Table 1: First-Step Estimation (Nigeria)**

| | Pseudo-Fathers' Wealth | | |
|---|---|---|---|
| | **2003** | **2008** | **2013** |
| C. Primary | 1.242*** | 0.914*** | 1.072*** |
| | (0.07) | (0.04) | (0.04) |
| C. Secondary | 1.936*** | 1.521*** | 1.616*** |
| | (0.23) | (0.07) | (0.06) |
| Higher Education | 2.760*** | 2.551*** | 2.381*** |
| | (0.14) | (0.07) | (0.06) |
| Age | 0.002 | 0.003* | 0.003* |
| | (0.00) | (0.00) | (0.00) |
| Urban | 1.476*** | 1.698*** | 1.324*** |
| | (0.06) | (0.04) | (0.03) |
| Observations | 2735 | 8613 | 8199 |
| Adjusted RSq | 0.423 | 0.432 | 0.425 |

**Note:** OLS first-stage estimation. Pseudo-Fathers' Wealth, wealth of an individual born before 1960, head of household. No Education, dummy variable, 1 if individual has not completed primary schooling and 0 otherwise (base category). C. Primary, dummy variable, 1 if individual has completed primary school and 0 otherwise. C. Secondary, dummy variable, 1 if individual has completed secondary schooling and 0 otherwise. Higher Education, dummy variable, 1 if an individual studies after secondary school and 0 otherwise. Age, age of an individual measured in years. Urban, dummy variable, 1 if individual lives in an urban area and 0 if it lives in a rural area. Constant Omitted. Robust standard errors presented in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

[16] Including the measure of IGE that also takes into account the levels of education of an individual is difficult in the context of a cross-country analysis where levels and degree of importance attributed to education are different across countries.

**Table 2: IGE Estimation (Nigeria)**

| | Sons' Wealth | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **2003** | | | **2008** | | | **2013** | | |
| | **(1)** | **(2)** | **(3)** | **(1)** | **(2)** | **(3)** | **(1)** | **(2)** | **(3)** |
| P. Father Wealth | 0.632*** | 0.426* | 0.451* | 0.551*** | 0.442*** | 0.456*** | 0.511*** | 0.391*** | 0.414*** |
| | [0.00] | [0.52] | [0.02] | [0.00] | [0.00] | [0.00] | [0.00] | [0.00] | [0.00] |
| C. Primary | | 0.075 | 0.084 | | 0.018 | 0.033 | | 0.100 | 0.099 |
| | | [0.52] | [0.47] | | [0.80] | [0.64] | | [0.08] | [0.11] |
| C. Secondary | | 0.045 | 0.042 | | 0.259*** | 0.267*** | | 0.149* | 0.152* |
| | | [0.70] | [0.73] | | [0.00] | [0.00] | | [0.02] | [0.02] |
| Higher Education | | 0.367 | 0.362 | | 0.318*** | 0.312*** | | 0.401*** | 0.358*** |
| | | [0.09] | [0.09] | | [0.00] | [0.00] | | [0.00] | [0.00] |
| Age | | | 0.107 | | | 0.103 | | | 0.174** |
| | | | [0.29] | | | [0.15] | | | [0.01] |
| Observations | 43 | 43 | 43 | 149 | 149 | 149 | 188 | 188 | 188 |
| Adjusted RSq | 0.385 | 0.423 | 0.420 | 0.299 | 0.410 | 0.417 | 0.257 | 0.364 | 0.389 |

Note: OLS second-stage IGE estimation. Sons' Wealth, wealth of an individual born in and after 1960, head of household, whose father lives in the same household. P. Father Wealth, predicted wealth of the father of an individual born in and after 1960, head of household, whose father lives in the same household. No Education, dummy variable, 1 if individual has not completed primary schooling and 0 otherwise (base category). C. Primary, dummy variable, 1 if individual has completed primary school and 0 otherwise. C. Secondary, dummy variable, 1 if individual has completed secondary schooling and 0 otherwise. Higher Education, dummy variable, 1 if an individual studies after secondary school and 0 otherwise. Age, age of an individual measured in years. Beta Coefficients presented. P-values in brackets. * significant 10%; ** significant 5%; *** significant 1%.

**Table 3: Summary Table of Estimated Intergenerational Elasticity (IGE)**

| | Ghana | Kenya | Malawi | Mali | Mozambique | Namibia | Nigeria | Senegal | Tanzania | Uganda | Zambia |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1991 | . | . | . | . | . | . | . | . | 0.175 | . | . |
| 1992 | . | . | . | . | . | 0.856 | . | 0.715 | . | . | 0.620 |
| 1993 | 0.685 | 0.621 | . | . | . | . | . | . | . | . | . |
| 1995 | . | . | . | 0.256 | . | . | . | . | . | 0.463 | . |
| 1996 | . | . | . | . | . | . | . | . | . | . | 0.894 |
| 1997 | . | . | . | . | 0.527 | . | . | . | . | . | . |
| 1998 | 0.917 | . | . | . | . | . | . | . | . | . | . |
| 2000 | . | . | 0.240 | . | . | 0.681 | . | . | . | 0.453 | . |
| 2001 | . | . | . | 0.563 | . | . | . | . | . | . | 0.860 |
| 2003 | 0.877 | 0.483 | . | . | 0.507 | . | 0.632 | . | . | . | . |
| 2004 | . | . | 0.233 | . | . | . | . | . | 0.507 | . | . |
| 2005 | . | . | . | . | . | . | . | 0.564 | . | . | . |
| 2006 | . | . | . | 0.597 | . | 0.574 | . | . | . | 0.178 | . |
| 2007 | . | . | . | . | . | . | . | . | . | . | 0.676 |
| 2008 | 0.517 | 0.876 | . | . | . | . | 0.551 | . | . | . | . |
| 2009 | . | . | . | . | 0.890 | . | . | . | . | . | . |
| 2010 | . | . | 0.371 | . | . | . | . | 0.659 | 0.654 | . | . |
| 2011 | . | . | . | . | 0.797 | . | . | . | . | 0.632 | . |
| 2012 | . | . | . | 0.889 | . | . | . | . | . | . | . |
| 2013 | . | . | . | . | . | 0.643 | 0.511 | . | . | . | . |

**Note:** Summary table of direct estimation of IGE correspondent to column (1) of Table 2, for each country and each year.

### 4.3.2. Intergenerational Immobility and Political Violence

As mentioned in the previous section, two separate analysis of political violence were implemented. The first takes into consideration two extensive margin measures of political violence (the existence of a MEPV and the existence of casualties provided that an event of political violence is registered). The second takes into consideration the intensity of a political violent event by looking at the number of registered occurrences per year and also at number of casualties per year (provided there was a political violent conflict registered).

Table 4 reports results on the first approach taken. The signal is positive for intergenerational immobility, *i.e.* has immobility increases the probability of both the existence of a MEPV and the existence of at least one casualty provided there was a politically violent event increase. The results are however not significant in all

specifications. Other measures of inequality are also not statistically significant across any specification in neither measure of political violence. Some significant positive effects are captured for GDP per capita, *i.e.*, a higher GDP per capita increases the probability of the existence a politically violent event; however results are not robust across the two conflict datasets. The measure of the degree of freedom of a country is also statistically significant across all specifications for the existence of a MEPV and it holds the expected sign (more freedom, lower probability of a MEPV occurring). The share of urban population has a significant (positive) effect on the existence of a MEPV.

Table 5 reports on the intensive measures of political violence. As can be observed. IGE remains with a positive sign, although, still not statistically significant in either variable. The only variable that captures persistent significant effects on the number of politically violent events is the degree of freedom. It holds the expected value, more freedom correlated to less reported occurrences of political violence. The share of urban population holds significant results across the two variables in the specifications that do not include time dummies: a higher amount of urban population increases both the number of politically violent events and number of deaths.

**Table 4: Extensive Political Violence and Intergenerational Mobility**

| | Extensive - MEPV | | | | | Extensive - Fatalities | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** | **(9)** | **(10)** |
| IGE | 3.224 | 3.805 | 3.675 | 0.540 | 1.235 | 4.498 | 10.982 | 10.707 | 6.632 | 10.227 |
| | (4.14) | (5.06) | (4.74) | (3.51) | (4.90) | (3.20) | (6.26) | (6.51) | (3.60) | (8.33) |
| Ethnic Fractionalization | | -9.712 | | | -86.266 | | -32.111 | | | -111.127 |
| | | (11.12) | | | (100.28) | | (20.55) | | | (107.41) |
| Ethnic Polarization | | | 0.475 | | -51.555 | | | 20.267 | | -59.763 |
| | | | (4.22) | | (56.52) | | | (12.87) | | (53.59) |
| Gini Coefficient | | | | 0.186 | 0.355 | | | | -0.099 | 0.046 |
| | | | | (0.11) | (0.21) | | | | (0.06) | (0.17) |
| GDP *per capita* | 0.909*** | 1.125** | 0.924*** | 1.153** | 0.713 | 0.544* | 2.119 | 2.404 | 0.447* | 0.606 |
| | (0.22) | (0.36) | (0.26) | (0.38) | (0.54) | (0.23) | (1.19) | (1.32) | (0.23) | (0.82) |
| Degree of Freedom | -1.025*** | -1.050*** | -0.947*** | -1.652** | -1.325*** | -0.160 | -0.650 | -0.655 | 0.101 | 0.255 |
| | (0.19) | (0.20) | (0.22) | (0.59) | (0.24) | (0.45) | (0.57) | (0.54) | (0.59) | (0.42) |
| Urban Population | 9.08E-08** | 9.72E-08*** | 8.73E-08*** | 3.07E-07 | 1.42E-07** | 3.35E-07 | 9.64E-07 | 1.11E-06 | 1.47E-07 | 1.11E-07 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Mountainous Terrain | -0.026 | 0.010 | -0.019 | -0.074 | -0.049 | 0.062 | 0.028 | 0.047 | 0.122 | 0.046 |
| | (0.10) | (0.11) | (0.11) | (0.20) | (0.06) | (0.09) | (0.08) | (0.11) | (0.15) | (0.05) |
| Constant | 482.404*** | 577.793** | 513.654*** | 390.905 | 76.391 | 129.826 | 937.467 | 1024.097 | 107.879 | 108.381 |
| | (132.02) | (179.89) | (135.96) | (264.65) | (96.40) | (330.32) | (671.49) | (707.21) | (392.10) | (97.94) |
| Time Dummies | yes | yes | yes | yes | no | yes | yes | yes | yes | no |
| Observations | 39 | 35 | 35 | 39 | 35 | 30 | 27 | 27 | 30 | 27 |
| Number of countries | 11 | 10 | 10 | 11 | 10 | 11 | 10 | 10 | 11 | 10 |
| Pseudo RSq | 0.563 | 0.551 | 0.542 | 0.624 | 0.644 | 0.252 | 0.372 | 0.357 | 0.277 | 0.358 |

**Note:** Maximum Likelihood in a logit specification. Extensive –MEPV, dummy variable equal to 1 if a MEPV occurred and 0 otherwise (a MEPV is an occurrence with more than 500 deaths), source: Center for Systemic Peace. Extensive – Fatalities, dummy variable (provided there was a registered episode of political violence) equal to 1 if there is at least one death and 0 otherwise, source: ACLED. IGE, measure of intergenerational mobility that varies between 0 and 1, where 0 represents full mobility and 1 represents no mobility. Ethnic Fractionalization, index of ethnolinguistic fractionalization calculated using the data of the WCE, source: Montlavo and Reynal-Querol (2005). Ethnic Polarization, index of ethnolinguistic polarization calculated using the data of the WCE, source: Montlavo and Reynal-Querol (2005). Gini Coefficient, GINI index, source: WDI. GDP per capita, log of real GDP per capita (current LCU), source: WDI. Degree of Freedom, scale between 1 and 7, 1 being the least free and 7 being the most free, source: Freedom House. Urban Population, urban population, source: WDI. Mountainous Terrain, percent of mountainous terrain, source: Fearon and Laitin (2003). Robust standard errors are clustered by country and presented in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

**Table 5: Intensive Political Violence and Intergenerational Mobility**

| | Intensive – Number of Events | | | | | Intensive – Fatalities | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** | **(9)** | **(10)** |
| IGE | 125.943 | 200.730 | 184.204 | 164.301 | 167.034 | 749.142 | 1356.519 | 1218.729 | 1352.602 | 180.503 |
| | (191.06) | (236.70) | (230.73) | (215.55) | (196.01) | (1257.89) | (841.06) | (812.51) | (1362.15) | (1248.23) |
| Ethnic Fractionalization | | -279.318 | | | -4679.902 | | -554.357 | | | -32142.44 |
| | | (407.51) | | | (2328.64) | | (3155.51) | | | (15981.60) |
| Ethnic Polarization | | | 122.692 | | -2596.751 | | | -131.1583 | | -17879.71 |
| | | | (230.36) | | (1184.27) | | | (2013.97) | | (7994.43) |
| Gini Coefficient | | | | -3.703 | 10.980 | | | | -58.265 | 58.181 |
| | | | | (6.30) | (7.20) | | | | (53.19) | (46.89) |
| GDP *per capita* | 11.264 | 34.529 | 32.546 | 6.568 | 21.374 | 26.535 | 156.134 | 124.550 | -47.343 | 102.902 |
| | (18.57) | (21.10) | (21.67) | (23.54) | (18.84) | (171.75) | (171.24) | (184.54) | (190.27) | (160.59) |
| Degree of Freedom | -83.996* | -81.929** | -80.854** | -84.408* | -47.241 | -671.76 | -580.686 | -570.915 | -678.243* | -358.729 |
| | (29.42) | (18.58) | (19.23) | (28.43) | (21.88) | (327.91) | (265.79) | (184.54) | (250.09) | (191.49) |
| Urban Population | 3.58E-06 | -2.58E-06 | -2.60E-06 | 3.04E-06 | 7.88E-06*** | 0.0000512 | 2.77E-06 | 3.34E-06 | 4.27E-05 | 7.67E-05*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Constant | 239.8594 | 99.1899 | -155.115 | 855.538 | 4603.913* | 2696.325 | -486.2375 | -405.5217 | 8929.249 | 33262.82* |
| | (258.02) | (128.04) | (551.86) | (806.90) | (1965.79) | (2773.64) | (1162.22) | (3199.03) | (6744.29) | (13979.39) |
| Time Dummies | yes | yes | yes | yes | no | yes | yes | yes | yes | no |
| Observations | 30 | 27 | 27 | 30 | 27 | 30 | 27 | 27 | 30 | 27 |
| Number of countries | 11 | 10 | 10 | 11 | 10 | 11 | 10 | 10 | 11 | 10 |
| Adjusted RSq | 0.471 | 0.886 | 0.882 | 0.441 | 0.539 | 0.547 | 0.897 | 0.897 | 0.570 | 0.580 |

**Note:** OLS estimation. Intensive - Number of Events, count variable on the number of registered episodes of political violence per year, source: ACLED. Intensive – Fatalities, (provided there was a registered episode of political violence) count of deaths per year, source: ACLED. Ethnic Fractionalization, index of ethnolinguistic fractionalization calculated using the data of the WCE, source: Montlavo and Reynal-Querol (2005). Ethnic Polarization, index of ethnolinguistic polarization calculated using the data of the WCE, source: Montlavo and Reynal-Querol (2005). Gini Coefficient, GINI index, source: WDI. GDP per capita, log of real GDP per capita (current LCU), source: WDI. Degree of Freedom, scale between 1 and 7, 1 being the least free and 7 being the most free, source: Freedom House. Urban Population, urban population, source: WDI. Robust standard errors are clustered by country and presented in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

### 4.3.3. Intergenerational Mobility Proxy and Political Violence

This section shows the results for the estimations conducted with the Afrobarometer dataset. Table 6 reports the results relative to equation 6.and equation 10. Table 7 reports the results relative to equation 11.

**Table 6: Proxy Mobility and Political Violence**

| | Ologit | | | IV |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| IGE Proxy | -0.030* | -0.028* | -0.030* | -0.188** |
| | (0.01) | (0.01) | (0.01) | (0.06) |
| cut1 | 1.63*** | 1.74*** | 1.45*** | . |
| cut2 | 2.77*** | 2.89*** | 2.61*** | . |
| cut3 | 3.55*** | 3.67*** | 3.39*** | . |
| cut4 | 4.51*** | 4.64*** | 4.36*** | . |
| Individual Controls | no | no | yes | yes |
| Location Controls | no | no | yes | yes |
| Country Fixed Effects | no | yes | yes | yes |
| Observations | 4832 | 4832 | 4832 | 4832 |

Note: Column (1) (2) (3), Maximum Likelihood in an ordered logit specification. Explained variable, ordered categorical variable on self-reported use of violence due to political reasons (0=No, would never do this, 1=No, but would do if had the chance, 2=Yes, once or twice, 3=Yes, several times, 4=Yes, often). Column (4), Instrumental Variable estimation, instrument is Present vs Past availability of goods (1= Much Worse, 2=Worse, 3=About the Same, 4=Better, 5=Much Better). Proxy IGE, difference between self-reported current well-being of an individual and the well-being of its parents 10 years ago (integer scale between -10 and 10; -10=an individual is 10 times worse than its parents, 0=an individual has the same well-being as his parents, 10=an individual is 10 times better than his parents). Robust standard errors in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

The coefficients of the proxy measure of intergenerational mobility hold significant results (at 10%) across all specifications. The sign of the coefficients indicate that if an individual perceives to be better off than its parents 10 years ago, the probability of using violence due to political reasons reduces. The cut-offs are statistically significant which indicates that the explanatory variable does not need to be collapsed.

The results of the instrumental variable estimation also present a negative significant relation between the self-reported measure of use of political violence and the intergenerational difference in well-being[17].

The results in Table 7 show the role of upward, non-existent and downward mobility on the probability of an individual using violence due to political reasons. Notice that across specifications 1, 3, and 5, having no mobility reduces significantly (at a 10% level) political violence compared with the base category (downward mobility). Additionally, in specifications 2, 4, and 6, in which the main objective was not only to capture the effect of an upward or downward movement of intergenerational well-being difference but also to understand if the current income position played any role, we observe that measures of mobility have no significance. However, belonging to the fifth quintile (as compared to the base category – third quintile) increases significantly (at 5% level) the probability of engaging in political violence. The interaction term between having no mobility and belonging to the fifth quintile reduces significantly the probability of an individual using violence due to political reasons. All cut-offs are statistically significant which means that the categories on the explained variable do not need to be collapsed.

[17] First-stage estimation of the instrumental variable is presented in appendix in Table A.4.

**Table 7: Categorical Proxy Mobility and Political Violence**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| No Mobility | -0.247* | -0.089 | -0.227* | -0.062 | -0.219* | -0.068 |
| | (0.11) | (0.16) | (0.11) | (0.16) | (0.11) | (0.16) |
| Upward Mobility | -0.164 | -0.168 | -0.169 | -0.162 | -0.171 | -0.155 |
| | (0.09) | (0.13) | (0.09) | (0.14) | (0.09) | (0.14) |
| Income (first quintile) | | -0.200 | | -0.148 | | -0.158 |
| | | (0.17) | | (0.17) | | (0.17) |
| Income (second quintile) | | 0.228 | | 0.238 | | 0.233 |
| | | (0.15) | | (0.15) | | (0.15) |
| Income (fourth quintilde) | | -0.042 | | -0.084 | | -0.046 |
| | | (0.18) | | (0.19) | | (0.19) |
| Income (fifth quintilde) | | 0.597** | | 0.601** | | 0.633** |
| | | (0.22) | | (0.22) | | (0.23) |
| No Mobility * Income (first quintile) | | -0.027 | | 0.012 | | 0.035 |
| | | (0.31) | | (0.31) | | (0.31) |
| No Mobility * Income (second quintile) | | -0.499 | | -0.501 | | -0.474 |
| | | (0.30) | | (0.30) | | (0.30) |
| No Mobility * Income (fourth quintile) | | 0.150 | | 0.079 | | 0.102 |
| | | (0.34) | | (0.34) | | (0.34) |
| No Mobility * Income (fifth quintile) | | -1.115* | | -1.200* | | -1.164* |
| | | (0.49) | | (0.50) | | (0.50) |
| Upward Mobility * Income (first quintile) | | 0.185 | | 0.195 | | 0.196 |
| | | (0.27) | | (0.26) | | (0.27) |
| Upward Mobility * Income (second quintile) | | -0.268 | | -0.274 | | -0.263 |
| | | (0.24) | | (0.24) | | (0.24) |
| Upward Mobility * Income (fourth quintile) | | 0.137 | | 0.138 | | 0.129 |
| | | (0.26) | | (0.26) | | (0.26) |
| Upward Mobility * Income (fifth quintile) | | -0.159 | | -0.188 | | -0.162 |
| | | (0.31) | | (0.31) | | (0.31) |
| cut1 | 1.51*** | 1.56*** | 1.62*** | 1.71*** | 1.33*** | 1.38*** |
| cut2 | 2.65*** | 2.71*** | 2.77*** | 2.86*** | 2.48*** | 2.54*** |
| cut3 | 3.43*** | 3.48*** | 3.55*** | 3.64*** | 3.27*** | 3.32*** |
| cut4 | 4.40*** | 4.45*** | 4.52*** | 4.61*** | 4.23*** | 4.29*** |
| Individual Controls | no | no | no | no | yes | yes |
| Location Controls | no | no | no | no | yes | yes |
| Country Fixed Effects | no | no | yes | yes | yes | yes |
| Observations | 4832 | 4832 | 4832 | 4832 | 4832 | 4832 |

Note: Maximum Likelihood in an ordered logit specification. Explained variable, ordered categorical variable on self-reported use of violence due to political reasons (0=No, would never do this, 1=No, but would do if had the chance, 2=Yes, once or twice, 3=Yes, several times, 4=Yes, often). Explanatory variable a categorical variable of the difference between the current well-being of an individual and the well-being of its parents 10 years ago; base category is Downward Mobility (negative difference), No Mobility (no difference) and Upward Mobility (positive difference). Income (first quintile), dummy variable equal to 1 if individual belongs to the first quintile and 0 otherwise. Income (second quintile), dummy variable equal to 1 if individual belongs to the second quintile and 0 otherwise. Income (third quintile), dummy variable equal to 1 if individual belongs to the third quintile and 0 otherwise (base category). Income (fourth quintile), dummy variable equal to 1 if individual belongs to the fourth quintile and 0 otherwise. Income (fifth quintile), dummy variable equal to 1 if individual belongs to the fifth quintile and 0 otherwise. Interaction terms are represented by '*'. Robust standard errors in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

## 5. Conclusion

This work project had as its main objective to introduce intergenerational mobility has a source of political violence. To do so, two separate approaches were undertaken. The first relied on macro-level data to do a cross-country analysis. No significant effects were found on the measure of intergenerational mobility in explaining political violence. Some significant results on variables such as GPD *per* capita, degree of freedom of a country and amount of urban population (in line with the literature) when taking into consideration the existence of a MEPV. The second approach used micro-level data to construct a proxy measure of IGE. I find that a higher positive difference in well-being of an individual as compared to its parents ten years ago reduces significantly the probability of the use of violence due to political reasons.

There are several fronts in which this field of research might benefit from future work. The first is the development of a theoretical model that introduces not only inequality, but also mobility of individuals in explaining political violence. Moreover, mechanisms that lead to political violence should be further investigated. The second is data availability and fitness to be able to better improve empirical estimations. The third is to further explore micro-level mechanisms in understanding engagement in political violence.

## 6. Bibliography

Angrist J.D., Krueger A.B. (1992), The effect of age at school entry on education attainment: an application of instrumental variables with moments from two samples, *Journal of the American Statistical Association*, 87, 328-336

Besley, Timothy, and Torsten Persson. 2011. *Pillars of Prosperity: the political economics of development clusters.* New Jersey: Princeton University Press.

Björklund, A. and Jäntti M. 1997. "Intergenerational Income Mobility in Sweden Compared to the United States." *American Economic Review*. December, 87:5, pp. 1009– 018.

Blattman, Christopher, and Edward Miguel. 2010. "Civil War." *Journal of Economic Literature*: 48(1), 3–57

Collier, Paul, and Anke Hoeffler. 1998. "On the economic causes of civil war." *Oxford Economic Papers*, 50(4): 563-73.

Collier, Paul, and Anke Hoeffler. 2004. "Greed and grievance in civil war." *Oxford Economic Papers*, 56(4): 563-595.

Cramer, Christopher. 2005. "Inequality and Conflict. A Review of an Age-Old Concern." Identities, Conflict and Cohesion, *United Nations Research Institute for Social Development, Programme* Paper Number 11.

Dixon, Jeffrey. 2009. "What Causes Civil Wars? Integrating Quantitative Research Findings." *International Studies Review*, 11(4): 707-735.

Jacoby, Tim. 2008. *Understanding Conflict and Violence: Theoretical and interdisciplinary approaches*. Oxon: Routledge.

Esteban, Joan, and Debraj Ray. 1994. "On the Measurement of Polarization." *Econometrica*, 62(4): 819-851.

Esteban, Joan, and Debraj Ray. 1999. "Conflict and Distribution." *Journal of Economic Theory*, 87(2): 379-415.

Esteban, Joan, Laura Mayoral, and Debraj Ray. 2012. "Ethnicity and Conflict: An Empirical Study." *American Economic Review,* 102(4): 1310-1342.

Esteban, Joan, and Debraj Ray. 2011. "Linking Conflict to Inequality and Polarization." *American Economic Review*, 101(4): 1345-74.

Fearon, James D., and David Laitin. 2003. "Ethnicity, Insurgency, and Civil War." *American Political Science Review,* 97: 75-90.

Inoue, A. and Solon G. (2010), Two-Sample Instrumental Variables Estimators, *The Review of Economics and Statistics*, 92, 557-561

Montalvo, José G., and Marta Reynal-Querol. 2005. "Ethnic Polarization, Potential Conflict, and Civil Wars." *American Economic Review*, 95(3): 796-816.

# CORRELATES OF INTERGENERATIONAL IMMOBILITY AND POLITICAL VIOLENCE

APPENDIX

MATILDE POLÓNIA GONÇALVES GRÁCIO

684

June 2015

**Table A.1: Descriptive Statistics - Demographic and Health Survey**

| | Ghana | Kenya | Malawi | Mali | Mozambique | Namibia | Nigeria | Senegal | Tanzania | Uganda | Zambia |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pseudo-Father** | | | | | | | | | | | |
| Wealth | -0.010 | 0.159 | -0.085 | -0.245 | -0.108 | 0.239 | -0.104 | -0.268 | -0.062 | -0.199 | -0.471 |
| | (2.03) | (2.23) | (1.77) | (1.78) | (2.08) | (2.36) | (1.84) | (1.96) | (1.84) | (1.82) | (1.77) |
| Age | 56.486 | 55.332 | 59.320 | 57.596 | 57.581 | 58.730 | 62.883 | 59.745 | 56.016 | 56.793 | 60.981 |
| | (12.57) | (12.26) | (10.86) | (11.54) | (10.92) | (12.75) | (10.26) | (11.80) | (12.83) | (12.15) | (10.26) |
| No Education | 0.439 | 0.282 | 0.251 | 0.842 | 0.360 | 0.337 | 0.531 | 0.789 | 0.397 | 0.252 | 0.260 |
| | (0.50) | (0.45) | (0.43) | (0.36) | (0.48) | (0.47) | (0.50) | (0.41) | (0.49) | (0.43) | (0.44) |
| C. Primary | 0.103 | 0.205 | 0.104 | 0.018 | 0.031 | 0.050 | 0.184 | 0.039 | 0.210 | 0.127 | 0.141 |
| | (0.30) | (0.40) | (0.30) | (0.13) | (0.17) | (0.22) | (0.39) | (0.19) | (0.41) | (0.33) | (0.35) |
| C. Secondary | 0.050 | 0.089 | 0.039 | 0.009 | 0.014 | 0.071 | 0.068 | 0.012 | 0.004 | 0.042 | 0.021 |
| | (0.22) | (0.28) | (0.19) | (0.09) | (0.12) | (0.26) | (0.25) | (0.11) | (0.06) | (0.20) | (0.14) |
| Higher Education | 0.078 | 0.055 | 0.015 | 0.022 | 0.008 | 0.061 | 0.092 | 0.029 | 0.015 | 0.059 | 0.040 |
| | (0.27) | (0.23) | (0.12) | (0.15) | (0.09) | (0.24) | (0.29) | (0.17) | (0.12) | (0.23) | (0.19) |
| Urban | 0.326 | 0.187 | 0.114 | 0.255 | 0.325 | 0.348 | 0.333 | 0.342 | 0.195 | 0.181 | 0.271 |
| | (0.47) | (0.39) | (0.32) | (0.44) | (0.47) | (0.48) | (0.47) | (0.47) | (0.40) | (0.39) | (0.44) |
| Observations | 8957 | 10117 | 12281 | 18290 | 10081 | 7367 | 19547 | 8897 | 11460 | 7382 | 6046 |

**Note:** Pseudo-Fathers' Wealth, wealth of an individual born before 1960, head of household. No Education, dummy variable, 1 if individual has no education and 0 otherwise. C. Primary, dummy variable, 1 if individual has completed primary school and 0 otherwise. C. Secondary, dummy variable, 1 if individual has completed secondary schooling and 0 otherwise. Higher Education, dummy variable, 1 if an individual studies after secondary school and 0 otherwise. Age, age of an individual measured in years. Urban, dummy variable, 1 if individual lives in an urban area and 0 if it lives in a rural area. First row means, Second row (in parenthesis) standard deviations.

**Table A.1: Descriptive Statistics - Demographic and Health Survey (continue)**

| | Ghana | Kenya | Malawi | Mali | Mozambique | Namibia | Nigeria | Senegal | Tanzania | Uganda | Zambia |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Father** | | | | | | | | | | | |
| P. Wealth | -0.918 | -0.270 | -0,1145 | -0.237 | -0.290 | 0.310 | -0.569 | -0.627 | -0.248 | -0.539 | -0.349 |
| | (1.02) | (1.41) | (1.05) | (1.06) | (1.19) | (1.61) | (0.99) | (1.01) | (1.02) | (1.08) | (1.25) |
| Age | 72.703 | 68.846 | 67.193 | 69.204 | 65.149 | 64.089 | 70.537 | 72.419 | 68.120 | 64.419 | 67.613 |
| | (11.54) | (11.04) | (12.90) | (9.98) | (11.53) | (13.58) | (10.91) | (11.59) | (11.40) | (13.32) | (10.21) |
| No Education | 0.812 | 0.654 | 0.303 | 0.936 | 0.486 | 0.429 | 0.753 | 0.946 | 0.608 | 0.547 | 0.360 |
| | (0.39) | (0.48) | (0.46) | (0.24) | (0.50) | (0.50) | (0.43) | (0.23) | (0.49) | (0.50) | (0.48) |
| C. Primary | 0.029 | 0.115 | 0.084 | 0.000 | 0.000 | 0.000 | 0.124 | 0.011 | 0.136 | 0.105 | 0.040 |
| | (0.17) | (0.32) | (0.28) | (0.00) | (0.00) | (0.00) | (0.33) | (0.10) | (0.34) | (0.31) | (0.03) |
| C. Secondary | 0.000 | 0.038 | 0.017 | 0.013 | 0.000 | 0.089 | 0.026 | 0.000 | 0.000 | 0.012 | 0.973 |
| | (0.00) | (0.19) | (0.13) | (0.11) | (0.00) | (0.29) | (0.16) | (0.00) | (0.00) | (0.11) | (0.16) |
| Higher Education | 0.029 | 0.000 | 0.000 | 0.006 | 0.000 | 0.018 | 0.016 | 0.007 | 0.016 | 0.012 | 0.000 |
| | (0.17) | (0.00) | (0.00) | (0.08) | (0.00) | (0.13) | (0.12) | (0.08) | (0.13) | (0.11) | (0.00) |
| Urban | 0.159 | 0.192 | 0.126 | 0.331 | 0.365 | 0.446 | 0.205 | 0.204 | 0.184 | 0.140 | 0.400 |
| | (0.37) | (0.40) | (0.33) | (0.47) | (0.48) | (0.50) | (0.40) | (0.40) | (0.39) | (0.35) | (0.49) |
| Observations | 138 | 52 | 119 | 157 | 74 | 56 | 380 | 279 | 125 | 86 | 75 |

**Note:** P. Father Wealth, predicted wealth of the father of an individual born in and after 1960, head of household, whose father lives in the same household. No Education, dummy variable, 1 if individual has no education and 0 otherwise. C. Primary, dummy variable, 1 if individual has completed primary school and 0 otherwise. C. Secondary, dummy variable, 1 if individual has completed secondary schooling and 0 otherwise. Higher Education, dummy variable, 1 if an individual studies after secondary school and 0 otherwise. Age, age of an individual measured in years. Urban, dummy variable, 1 if individual lives in an urban area and 0 if it lives in a rural area. First row means, Second row (in parenthesis) standard deviations.

**Table A.1: Descriptive Statistics - Demographic and Health Survey (continue)**

| | Ghana | Kenya | Malawi | Mali | Mozambique | Namibia | Nigeria | Senegal | Tanzania | Uganda | Zambia |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Son** | | | | | | | | | | | |
| Wealth | -1.038 | 0.099 | -0.061 | -0.055 | -0.020 | 0.650 | -0.444 | -0.806 | 0.232 | -0.513 | 0.436 |
| | (1.48) | (2.28) | (1.56) | (1.99) | (2.15) | (2.29) | (1.71) | (1.65) | (2.15) | (1.06) | (2.36) |
| Age | 31.529 | 31.865 | 30.630 | 34.318 | 29.797 | 32.500 | 33.811 | 36.742 | 32.936 | 31.605 | 33.293 |
| | (6.83) | (6.80) | (6.93) | (6.35) | (7.10) | (7.62) | (7.96) | (6.79) | (6.92) | (7.67) | (8.01) |
| No Education | 0.449 | 0.173 | 0.084 | 0.631 | 0.095 | 0.161 | 0.268 | 0.746 | 0.088 | 0.093 | 0.040 |
| | (0.50) | (0.38) | (0.28) | (0.48) | (0.29) | (0.37) | (0.44) | (0.44) | (0.28) | (0.29) | (0.20) |
| C. Primary | 0.065 | 0.212 | 0.126 | 0.013 | 0.068 | 0.054 | 0.182 | 0.050 | 0.624 | 0.151 | 0.280 |
| | (0.25) | (0.41) | (0.33) | (0.11) | (0.25) | (0.23) | (0.39) | (0.22) | (0.49) | (0.36) | (0.45) |
| C. Secondary | 0.065 | 0.192 | 0.134 | 0.013 | 0.027 | 0.179 | 0.224 | 0.004 | 0.000 | 0.023 | 0.120 |
| | (0.25) | (0.40) | (0.34) | (0.11) | (0.16) | (0.39) | (0.42) | (0.06) | (0.00) | (0.15) | (0.33) |
| Higher Education | 0.014 | 0.077 | 0.000 | 0.032 | 0.014 | 0.018 | 0.134 | 0.018 | 0.016 | 0.058 | 0.067 |
| | (0.12) | (0.27) | (0.00) | (0.18) | (0.12) | (0.13) | (0.34) | (0.13) | (0.13) | (0.24) | (0.25) |
| Observations | 138 | 52 | 119 | 157 | 74 | 56 | 380 | 279 | 125 | 86 | 75 |

**Note:** Sons' Wealth, wealth of an individual born in and after 1960, head of household, whose father lives in the same household. No Education, dummy variable, 1 if individual has no education and 0 otherwise. C. Primary, dummy variable, 1 if individual has completed primary school and 0 otherwise. C. Secondary, dummy variable, 1 if individual has completed secondary schooling and 0 otherwise. Higher Education, dummy variable, 1 if an individual studies after secondary school and 0 otherwise. Age, age of an individual measured in years. Urban, dummy variable, 1 if individual lives in an urban area and 0 if it lives in a rural area. First row means, Second row (in parenthesis) standard deviations.

**Table A.2: Descriptive Statistics - Political Violence and other variables**

| | Mean | Standard Deviation | Observations |
|---|---|---|---|
| Extensive – MEPV | 0.282 | 0.46 | 39 |
| Extensive – Fatalities | 0.867 | 0.35 | 30 |
| Intensive – Number of Events | 118.633 | 207.15 | 30 |
| Intensive – Fatalities | 745.100 | 1848.24 | 30 |
| Ethnic Fractionalization | 0.837 | 0.08 | 35 |
| Ethnic Polarization | 0.483 | 0.15 | 35 |
| Gini Coefficient | 46.537 | 9.21 | 39 |
| GDP *per capita* | 10.167 | 2.79 | 39 |
| Degree of Freedom | 4.487 | 1.13 | 39 |
| Urban Population | 9387672.000 | 16700000.00 | 39 |
| Mountainous Terrain | 6.944 | 8.44 | 39 |

**Note:** Extensive – MEPV, dummy variable equal to 1 if a Major Episode of Political Violence occurred and 0 otherwise (a Major Episode of Political Violence is defined as an occurrence with more than 500 reported deaths), source: Center for Systemic Peace. Extensive – Fatalities, dummy variable (provided there was a registered episode of political violence) equal to 1 if there is at least one death and 0 otherwise, source: ACLED. Intensive - Number of Events, count variable on the number of registered episodes of political violence per year, source: ACLED. Intensive – Fatalities, (provided there was a registered episode of political violence) count of deaths per year, source: ACLED. Ethnic Fractionalization, index of ethnolinguistic fractionalization calculated using the data of the WCE, source: Montlavo and Reynal-Querol (2005). Ethnic Polarization, index of ethnolinguistic polarization calculated using the data of the WCE, source: Montlavo and Reynal-Querol (2005). Gini Coefficient, GINI index (World Bank estimate), source: WDI. GDP per capita, log of real GDP per capita (current LCU), source: WDI. Degree of Freedom, scale between 1 and 7, 1 being the least free and 7 being the most free, source: Freedom House, Freedom in the World Data, 1972-2013. Urban Population, urban population, source: WDI. Mountainous Terrain, percent of mountainous terrain, source: Fearon and Laitin (2003).

**Table A.3: Descriptive Statistics - Afrobarometer**

| | Botswana | Cape Verde | Ghana | Kenya | Lesotho | Malawi | Mali | Mozambique | Namibia | Nigeria | Senegal | South Africa | Uganda | Zambia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Individual Characteristics** | | | | | | | | | | | | | | |
| Age | 27.612 | 27.008 | 30.073 | 29.851 | 30.163 | 28.851 | 31.659 | 30.349 | 29.367 | 28.083 | 30.911 | 30.672 | 29.972 | 29.122 |
| | (7.08) | (7.29) | (6.94) | (7.48) | (7.52) | (6.93) | (7.40) | (7.71) | (7.22) | (6.92) | (7.72) | (7.69) | (6.83) | (7.36) |
| Head of Household | 0.374 | 0.412 | 0.313 | 0.676 | 0.539 | 0.738 | 0.404 | 0.769 | 0.390 | 0.426 | 0.433 | 0.509 | 0.769 | 0.671 |
| | (0.49) | (0.49) | (0.47) | (0.47) | (0.50) | (0.44) | (0.49) | (0.42) | (0.49) | (0.49) | (0.50) | (0.50) | (0.42) | (0.47) |
| Urban | 0.495 | 0.568 | 0.498 | 0.227 | 0.146 | 0.093 | 0.376 | 0.438 | 0.502 | 0.527 | 0.478 | 0.566 | 0.169 | 0.424 |
| | (0.50) | (0.50) | (0.50) | (0.42) | (0.35) | (0.29) | (0.49) | (0.50) | (0.50) | (0.50) | (0.50) | (0.50) | (0.38) | (0.50) |
| No Education | 0.059 | 0.031 | 0.170 | 0.018 | 0.079 | 0.056 | 0.337 | 0.172 | 0.004 | 0.062 | 0.133 | 0.019 | 0.039 | 0.023 |
| | (0.24) | (0.17) | (0.38) | (0.13) | (0.27) | (0.23) | (0.47) | (0.38) | (0.06) | (0.24) | (0.34) | (0.14) | (0.19) | (0.15) |
| C. Primary | 0.154 | 0.272 | 0.239 | 0.209 | 0.169 | 0.169 | 0.031 | 0.231 | 0.127 | 0.081 | 0.025 | 0.066 | 0.172 | 0.125 |
| | (0.36) | (0.45) | (0.43) | (0.41) | (0.38) | (0.38) | (0.17) | (0.42) | (0.33) | (0.27) | (0.16) | (0.25) | (0.38) | (0.33) |
| C. Secondary | 0.289 | 0.160 | 0.143 | 0.291 | 0.079 | 0.109 | 0.098 | 0.024 | 0.317 | 0.349 | 0.059 | 0.323 | 0.115 | 0.243 |
| | (0.45) | (0.37) | (0.35) | (0.45) | (0.27) | (0.31) | (0.30) | (0.15) | (0.47) | (0.48) | (0.24) | (0.47) | (0.32) | (0.43) |
| Higher Education | 0.176 | 0.125 | 0.093 | 0.183 | 0.062 | 0.028 | 0.067 | 0.036 | 0.147 | 0.257 | 0.133 | 0.158 | 0.213 | 0.181 |
| | (0.38) | (0.33) | (0.29) | (0.39) | (0.24) | (0.17) | (0.25) | (0.19) | (0.35) | (0.44) | (0.34) | (0.37) | (0.41) | (0.39) |
| Observations | 273 | 257 | 259 | 611 | 178 | 248 | 255 | 169 | 259 | 545 | 203 | 424 | 615 | 304 |

**Note:** Age, age of an individual measured in years. Head of Household, dummy variable, 1 if individual in head of household and 0 otherwise. Urban, dummy variable, 1 if individual lives in an urban area and 0 if it lives in a rural area. No Education, dummy variable, 1 if individual has no education and 0 otherwise. C. Primary, dummy variable, 1 if individual has completed primary school and 0 otherwise. C. Secondary, dummy variable, 1 if individual has completed secondary schooling and 0 otherwise. Higher Education, dummy variable, 1 if an individual studies after secondary school and 0 otherwise. First row means, Second row (in parenthesis) standard deviations.

**Table A.3: Descriptive Statistics - Afrobarometer (continue)**

| | Botswana | Cape Verde | Ghana | Kenya | Lesotho | Malawi | Mali | Mozambique | Namibia | Nigeria | Senegal | South Africa | Uganda | Zambia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Individual Characteristics** | | | | | | | | | | | | | | |
| No Employment | 0.593 | 0.440 | 0.386 | 0.525 | 0.775 | 0.810 | 0.761 | 0.710 | 0.398 | 0.484 | 0.690 | 0.465 | 0.485 | 0.497 |
| | (0.49) | (0.50) | (0.49) | (0.50) | (0.42) | (0.39) | (0.43) | (0.46) | (0.49) | (0.50) | (0.46) | (0.50) | (0.50) | (0.50) |
| Part Time Employment | 0.095 | 0.288 | 0.216 | 0.209 | 0.118 | 0.065 | 0.114 | 0.130 | 0.154 | 0.213 | 0.133 | 0.111 | 0.187 | 0.151 |
| | (0.29) | (0.45) | (0.41) | (0.41) | (0.32) | (0.25) | (0.32) | (0.34) | (0.36) | (0.41) | (0.34) | (0.31) | (0.39) | (0.36) |
| Full Time Employment | 0.311 | 0.272 | 0.398 | 0.265 | 0.107 | 0.125 | 0.125 | 0.160 | 0.448 | 0.303 | 0.177 | 0.425 | 0.328 | 0.352 |
| | (0.46) | (0.45) | (0.49) | (0.44) | (0.31) | (0.33) | (0.33) | (0.37) | (0.50) | (0.46) | (0.38) | (0.49) | (0.47) | (0.48) |
| Income (first quintile) | 0.044 | 0.272 | 0.459 | 0.160 | 0.107 | 0.077 | 0.365 | 0.000 | 0.154 | 0.094 | 0.182 | 0.045 | 0.195 | 0.299 |
| | (0.21) | (0.45) | (0.50) | (0.37) | (0.31) | (0.27) | (0.48) | (0.00) | (0.36) | (0.29) | (0.39) | (0.21) | (0.40) | (0.46) |
| Income (second quintile) | 0.168 | 0.241 | 0.270 | 0.191 | 0.062 | 0.040 | 0.188 | 0.349 | 0.193 | 0.156 | 0.099 | 0.191 | 0.180 | 0.158 |
| | (0.37) | (0.43) | (0.44) | (0.39) | (0.24) | (0.20) | (0.39) | (0.48) | (0.40) | (0.36) | (0.30) | (0.39) | (0.38) | (0.37) |
| Income (third quintile) | 0.187 | 0.101 | 0.085 | 0.245 | 0.096 | 0.069 | 0.224 | 0.124 | 0.208 | 0.172 | 0.123 | 0.229 | 0.164 | 0.168 |
| | (0.39) | (0.30) | (0.28) | (0.43) | (0.29) | (0.25) | (0.42) | (0.33) | (0.41) | (0.38) | (0.33) | (0.42) | (0.37) | (0.37) |
| Income (fourth quintile) | 0.128 | 0.035 | 0.035 | 0.124 | 0.129 | 0.121 | 0.071 | 0.065 | 0.143 | 0.327 | 0.138 | 0.179 | 0.200 | 0.036 |
| | (0.33) | (0.18) | (0.18) | (0.33) | (0.34) | (0.33) | (0.26) | (0.25) | (0.35) | (0.47) | (0.35) | (0.38) | (0.40) | (0.19) |
| Income (fifth quintile) | 0.099 | 0.004 | 0.008 | 0.036 | 0.045 | 0.218 | 0.012 | 0.018 | 0.089 | 0.116 | 0.020 | 0.151 | 0.093 | 0.000 |
| | (0.30) | (0.06) | (0.09) | (0.19) | (0.21) | (0.41) | (0.11) | (0.13) | (0.29) | (0.32) | (0.14) | (0.36) | (0.29) | (0.00) |
| Observations | 273 | 257 | 259 | 611 | 178 | 248 | 255 | 169 | 259 | 545 | 203 | 424 | 615 | 304 |

**Note:** No Employment, dummy variable, 1 if individual is not employed and 0 otherwise. Part Time Employment, dummy variable, 1 if individual is employed part time and 0 otherwise. Full Time Employment, dummy variable, 1 if individual is employed full time variable and 0 otherwise. Income (first quintile), dummy variable, 1 if income of individual is in first quintile and 0 otherwise. Income (second quintile), dummy variable, 1 if income of individual is in second quintile and 0 otherwise. Income (third quintile), dummy variable, 1 if income of individual is in third quintile and 0 otherwise. Income (fourth quintile), dummy variable, 1 if income of individual is in fourth quintile and 0 otherwise. Income (fifth quintile), dummy variable, 1 if income of individual is in fifth quintile and 0 otherwise. First row means, Second row (in parenthesis) standard deviations.

**Table A.3: Descriptive Statistics - Afrobarometer (continue)**

| | Botswana | Cape Verde | Ghana | Kenya | Lesotho | Malawi | Mali | Mozambique | Namibia | Nigeria | Senegal | South Africa | Uganda | Zambia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location Characteristics** | | | | | | | | | | | | | | |
| School | 0.626 | 0.665 | 0.946 | 0.766 | 0.652 | 0.851 | 0.616 | 0.899 | 0.625 | 0.895 | 0.926 | 0.788 | 0.954 | 0.822 |
| | (0.48) | (0.47) | (0.23) | (0.42) | (0.48) | (0.36) | (0.49) | (0.30) | (0.48) | (0.31) | (0.26) | (0.41) | (0.21) | (0.38) |
| Police | 0.527 | 0.187 | 0.301 | 0.182 | 0.146 | 0.089 | 0.071 | 0.349 | 0.432 | 0.442 | 0.300 | 0.455 | 0.260 | 0.293 |
| | (0.50) | (0.39) | (0.46) | (0.39) | (0.35) | (0.28) | (0.26) | (0.48) | (0.50) | (0.50) | (0.46) | (0.50) | (0.44) | (0.46) |
| Health Clinic | 0.344 | 0.237 | 0.548 | 0.340 | 0.219 | 0.294 | 0.376 | 0.473 | 0.332 | 0.719 | 0.581 | 0.566 | 0.654 | 0.569 |
| | (0.48) | (0.43) | (0.50) | (0.47) | (0.41) | (0.46) | (0.49) | (0.50) | (0.47) | (0.45) | (0.49) | (0.50) | (0.48) | (0.50) |
| Electricity Grid | 0.857 | 0.837 | 0.625 | 0.409 | 0.270 | 0.218 | 0.310 | 0.391 | 0.421 | 0.694 | 0.576 | 0.830 | 0.231 | 0.513 |
| | (0.35) | (0.37) | (0.48) | (0.49) | (0.45) | (0.41) | (0.46) | (0.49) | (0.49) | (0.46) | (0.50) | (0.38) | (0.42) | (0.50) |
| Piped Water | 0.850 | 0.607 | 0.591 | 0.339 | 0.281 | 0.194 | 0.357 | 0.426 | 0.502 | 0.490 | 0.571 | 0.821 | 0.158 | 0.401 |
| | (0.36) | (0.49) | (0.49) | (0.47) | (0.45) | (0.40) | (0.48) | (0.50) | (0.50) | (0.50) | (0.50) | (0.38) | (0.36) | (0.49) |
| Sewage | 0.392 | 0.366 | 0.328 | 0.146 | 0.180 | 0.036 | 0.192 | 0.243 | 0.421 | 0.347 | 0.315 | 0.677 | 0.091 | 0.257 |
| | (0.49) | (0.48) | (0.47) | (0.35) | (0.39) | (0.19) | (0.39) | (0.43) | (0.49) | (0.48) | (0.47) | (0.47) | (0.29) | (0.44) |
| Observations | 273 | 257 | 259 | 611 | 178 | 248 | 255 | 169 | 259 | 545 | 203 | 424 | 615 | 304 |

**Note:** School, dummy variable, 1 if enumeration area has a school and 0 otherwise. Police, dummy variable, 1 if enumeration area has a police station and 0 otherwise. Health Clinic, dummy variable, 1 if enumeration area has a health clinic and 0 otherwise. Electricity Grid, dummy variable, 1 if enumeration area has an electricity grid and 0 otherwise. Piped Water, dummy variable, 1 if enumeration area has piped water and 0 otherwise. Sewage, dummy variable, 1 if enumeration area has sewage and 0 otherwise. First row means, Second row (in parenthesis) standard deviations.

**Table A.4: IV First-Stage Regression**

| | (1) | (2) | (3) |
|---|---|---|---|
| Availability of goods | 0.186*** | 0.214*** | 0.184*** |
| | (0.03) | (0.04) | (0.03) |
| Individual Controls | no | no | yes |
| Location Controls | no | no | yes |
| Country Fixed Effects | no | yes | yes |
| Observations | 4832 | 4832 | 4832 |

Note: First-Stage OLS regression. Explained variable, difference between self-reported current well-being of an individual and the well-being of its parents 10 years ago (integer scale between -10 and 10; -10=an individual is 10 times worse than its parents, 0=an individual has the same well-being as his parents, 10=an individual is 10 times better than his parents. Explanatory variable, Present vs Past availability of goods (1= Much Worse, 2=Worse, 3=About the Same, 4=Better, 5=Much Better). Robust standard errors in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.